

AVIATION WEEK

A MCGRAW-HILL PUBLICATION

SEPT. 12, 1949



Designers and builders of AIRCRAFT

U. S. Navy's PANTHER

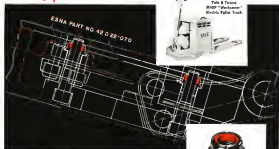
The Grumman Panther, the U. S. Navy's new carrier based Fighter, is equipped with one of the most powerful production jet-engines in the world. A worthy successor to the Navy's illustrious Grumman Fighters, the Wildcat and the Hellcat, this new, rugged Panther is superbly qualified to strike fast and hard wherever our fleets may be called upon to control the air.

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Contractors to the Armed Services

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**FOR COST-CUTTING
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—The Red Elastic Collar protects inaccessible bolted fastenings from failures due to VIBRATION!

After testing many types of fasteners Yale & Towne selected ESNA spline nuts as the solution for the blind mountings on the front and rear assemblies of the 200P "Workman" Elastic Puller Tool. Included in this set, lower ballast these inaccessible blind mountings, loss of adjustment and mechanical wear. Their research proved that self-locking fasteners at these application points provided protection against unnecessary downtime... added resistance against service abuse and repairs.

This is a typical example of the growing industrial acceptance of ESNA spline nuts... especially designed for easy driving into and easy removal, inspection or adjustment settings. By means of this simple installation the coating is given a finished surface, a touch-drilling operation is avoided so because the drill is allowed to run through

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This photograph suggests the wide variety in MacWhythe's comprehensive line of "Side-Lock," "Sockettype" and "Rigid" terminals. "Hi-Fatigue"

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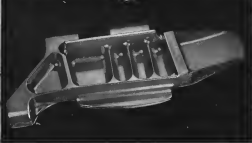
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Commonly used sizes and types are regularly stocked, other "standards" and "specials" are made to order.

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Typical of many Wyman-Gordon developments is this complicated light alloy forging used in the wing structure of one of Uncle Sam's latest fighting planes.

Modern transportation on the ground and in the air requires the maximum use of forgings. For greatest strength with minimum weight and uniformity of quality no other method of forming metal competes with the forging process.

Are you taking full advantage of the constantly growing range of forgings? Wyman-Gordon forgings all the way from five up to one thousand pounds.

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Forgings of Aluminum, Magnesium, Steel

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HARVEY, ILLINOIS

DETROIT, MICHIGAN



Planes and Pilots

ABOVE: The Goodyear Tugby races on wheels, projected outside the hangar, waiting for the simulation tests which preceded the three-day period at the National Air Race. RIGHT: Thompson Tugby winner Cook (left) (extreme right) is greeted by commanding Pilot and McAllister at the judge's stand, after the race which was held at Bill Odom. BE LOW: McAllister's happy ground crew prepared to tow the Goodyear Tug back to the hangar after it placed second in the Thompson. One blade of the propeller was painted white, which gave spectators the erroneous impression that the prop was "ground down" as the engine was not operating at full speed. All three Thompson winners piloted Goodyear Tugs, only 14 of which were ordered by the Navy last year and at engine.



Trim Tool

DOES THE JOB on the LATEST BANSHEE

• Rudder Trim Tab Actuation



• Aileron Trim Tab Actuation



Selection of the "Trim Tool" for Aileron and Rudder Tab Actuation on the XF2H-1, F2H-1 and F2H-2 McDonnell "BANSHEE" was based upon the compactness and simplicity of installation combined with the inherent weight saving obtained by using the actuator for a portion of the mass balance.

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AVIATION CALENDAR

- Sept. 12-16-1980 anniversary meeting, International Air Transport Assn. The Hague, Holland
- Sept. 12-16-Fourth national instrument conference and exhibit, sponsored by The Instrument Society of America, Red Bank, Delaware, St. Louis
- Sept. 14-15-1980 eastern division meeting of NACB, New York City
- Sept. 17-18-Aircraft Owners and Pilots Assn. annual summer round-up flight and trade inventory conference, Jacksonville Beach, Fla.
- Sept. 18-20-International Northeast Avionics Council convention, Spokane, Wash.
- Sept. 22-25-AISC-CIAA CAB transport meeting on C-130, 4th police and transportation, Royal Stirling, Washington, D.C.
- Sept. 26-28-National Electronics Conference, Edgewater Beach Hotel, Chicago
- Sept. 25-28-1980 fall meeting, American Society of Mechanical Engineers, Hotel Lexington, Los Angeles
- Oct. 10-Tenth anniversary meeting, Society of Naval Architects, New York City
- Oct. 10-11-1980 national instrument meeting and aircraft engineering display, Bala Hare, Los Angeles
- Oct. 7-8-American Air Mail Society exhibit tour and convention, Edgewater Beach Hotel, Chicago
- Oct. 12-13-Air Defense Assn. convention, Roney Beach, Calif.
- Oct. 12-13-1980 conference on airport management and operations, sponsored by University of Oklahoma and Southern Flight magazine, Norman, Okla.
- Oct. 17-20-NASB strong armament meeting, Dallas, Texas
- Oct. 18-19-80 NAS council meeting, Wright-Patterson AFB, Dayton, Ohio
- Oct. 30-Third annual San Francisco Air Fest, sponsored by James Chamber of Commerce, San Francisco Airport
- Oct. 19-Nov. 2-Annual convention, National Assn. of State Airports Officials, New Orleans
- Nov. 8-12-Seventh annual meeting Avionics Distribution and Manufacturers Assn., French Lick Springs Hotel, French Lick, Ind.
- Nov. 19-20-3rd Annual meeting, Society for Experimental Stress Analysis, Hotel New Yorker, New York
- Jan. 13-15, 1981-All-American Air Meeting, Miami
- Mar. 6-8, 1981-47th annual meeting, American Road Builders Assn., Motels Inns Plaza Hotel, Cincinnati
- Mar. 16-19, 1981-National Marine Exposition, sponsored by Society of the Marine Industry, Navy Pier, Chicago

PICTURE CREDITS

7, 10, 12, 14, 16-Robert R. Stock; 13-John White; 15-M. D. D.; 16-John D. White; 17-19-M. D. D.; 20-John D. White

NEWS DIGEST

Aircraft Policy

Each airline which the protected domestic airline may offer as much, but of the work itself may be other promotional funds during the coming year were defined last week by the Airline Association Board.

• **First-of-the-week** flight times should be extended to June 30, 1980.

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• **Capital Airlines' "Night Hawk" flights** from Washington and New York to Chicago and Minneapolis, Minn. should be extended to June 30, 1980.

• **Capital's request to extend "Night Hawk" flights** to the New York-New Orleans route with 36-passenger DC-10s and National Airlines' proposed New York-Miami coach service with 46-passenger DC-8s will be rejected.

• **TWA's New York-Chicago coach flights** with 36-passenger Boeing Stratojets and National Airlines' New York-Seattle and proposed Chicago-Portland, Ore., coach flights with 36-passenger DC-8s will be approved for a one-month extension.

• **Warren Air Lines'** proposed 60-passenger DC-8 coach service between San Diego and Seattle will be approved if departure times are limited to between 30 pm and 1 am.

DOMESTIC

Elmco Club-Air price has been reduced from \$400 to \$395. Sellers American, Inc., announced. The Elmco Club-Air is being discontinued for lack of interest in this model. There will be no change in replacement furnished with the Club-Air, despite the price cut.

Transwest Air Lines' contract to manage, maintain and operate the Landing Area Expressway Station at Austin, Calif., has been extended to June 30, 1981. TAI has held the contract for the past two years.

Two Navy agencies of the Military Air Transport Service topped all Air Force units on the Pacific coast, according to efficiency ratings just released, during the five months the Navy planes and crews participated

The two agencies were VASB and VASB. Navy says its maintenance is better. AF says the Navy put far more maintenance men per job.

Seattle Chamber of Commerce is suing a fleet of \$75,000-800,000 to fight any proposal that Boeing Airplane Co. be named from the city Air Force has suggested that all Boeing bombers (which eventually will come just west of Boeing products) be named to Washington as the grounds that the Seattle site is "vulnerable" to an attack. So is the whole Pacific Coast, says the chamber.

Military Air Transport Service is reorganizing normal schedules, which were extended to make more planes and men available for the Berlin airlift. For the end of the year. Redeployment of Berlin forces begins Aug. 1 and will end Oct. 31. Normal schedules of normal air transport flights were resumed Sept. 1. MATS' Cargo, Mail, and Air Mail Training Center now will become a transport training unit.

Chesley moving from Jan. 2 crash of a DC-3 owned by Seattle Air Charter has been settled by Litton at London for \$117,000. Accident took the lives of 11 Yale University students and in April 15 others.

INTERNATIONAL

Society of British Aircraft Constructors issued its annual report from Birmingham, England, with display of latest jet and military types. Three new jet fighters were displayed: Avon 747, an all-weather type which flew for the first time just before the show opened and which is believed to be capable of supersonic speed, an Hawker Siddeley P.12, a two-engine fighter, but with a Gladius engine, and the Gladius, and the Hawker Siddeley P.12, a night fighter also based on the Vampire.

Australian National Aerospace is considering an order for two Vickers Viscount turboprop transports. Delivery would be in about 10 months. Trans-Australia Airlines, the government enterprise, has spent technical assistance to both Canada (to use the Avon jet) and to England. Whether jet or turboprop will be ordered will depend greatly upon financial arrangements that can be worked out. Meanwhile, Qantas Airways, an affiliate of British Overseas Airways Corp., has indicated interest in the Viscount aircraft.



solves high-temperature problems because it's built to beat the heat



Here's one wire answer to the problems encountered with aircraft wiring under high-temperature conditions. With triple-aluminum treated General Electric Deltabeston wire.

It's the wire that triple-aluminum treatment means in G-E Deltabeston wire construction. (1) three layers of triple-aluminum treated Deltabeston insulation, (2) aluminum-impregnated glass braid, and (3) overall aluminum-veneer finish.

It's the wire that triple-aluminum treatment means in G-E Deltabeston wire performance: (1) remarkably high immunity to effects of stress and heat; (2) high moisture resistance, because the aluminum acts as a barrier to the moisture film; and (3) excellent corrosion resistance, because the glass braid has the extra protection of aluminum veneer.

The famous heat-bearing Deltabeston wire includes many and various designed for power, lighting, and communication systems, and for instrument wiring. It's paid time to know more about this famous, high-quality wire just address GE's W30-000, Communications Materials Department, General Electric Company, Bangalore 2, Connecticut.





From the National Air Races . . .

ABOVE: Li W. C. Rau, the winner of the Alamo Sea Race, receives his trophy from Ron Shown, Alamo club engineer. LEFT: Miss Madlyn Rich performed acrobatics, suspended above the field by this bell rope. BELOW RIGHT: Bill Chalmers is shown standing the pylons on his first

try at the White Thompson Race. BELOW LEFT: Goodyear winner Bill Brown and is greeted at the finish line by starter Paul Strickland. BOTTOM: Kasten as the Solus Trophy Race are lined up in the race-line start, which was used for most of the races.



. . . At Cleveland

ABOVE: Cook Chalmers' P-11, winner of the Thompson, after the race. RIGHT: P-11's entry in the Goodyear Race. MID-LEFT RIGHT: John Robinson, who piloted the P-11, is greeted by owner Tony LeVier, who did not enter any of the races. The craft pulled out of the Goodyear when it lost its canopy. BOTTOM RIGHT: Li Chai Smith flew the modified craft to fourth place in the Goodyear Competition. BELOW: Coast Guard demonstrates a rescue boat on scene with this P-11 helicopter.



F-86 Speed Runs Steal National Air Races

North American jets exceed critical Mach over closed course.

By Stanley L. Gilbert

CLEVELAND — North American F-86s, chief attraction at last week's National Air Races, have exceeded 710 mph, and 37,000 ft. altitude in flight tests.

The Sabers, top planes in U. S. Air Force's fighter stable, were shown to the American public in the first test in operational and racing roles. This was the second year that the swept-wing craft took top honors at the Air Race. Last year, in unofficial world speed record tests before the crowd, the F-86 reached 659,490 mph in low level flight, piloted by Major Richard L. Johnson.

Four F-86 Sabers, two from Macch AFB and two from Langley AFB, were scheduled to participate in the jet division of the Thompson Trophy Race, but only two of the planes—both from the Fourth Fighter Group at Langley AFB—actually took off. One Sabre did not get off the ground, the other dropped out when the race started, both dropping the pilot too late to affect adequate validity.

Winner-Capt. Bruce Cunningham, who this year piloted the winning F-86 at an average speed of 584,175 mph over the 15 mi course for 11 laps, finished the race after he had lost all but a small amount of his elevation. All men on the taking edge of the closure had popped and then reared the tailplane of the Sabers were visible.

Capt. Alvin C. Johnson, only other pilot in the race, finished the course at 580,152 mph, and recorded the fastest lap at 535,414 mph.

Both F-86s were loaded with 450 gal of JP-1 fuel before the race started, but finished with considerably less than the Sabers' collected six gallons of 70 gal. While the two-planet Thompson course covers only 225 miles, the Sabers actually flew nearly 25 miles around at 15 ft for each of the laps. Both planes landed with about 20 gal left in the tanks.

Swift Descent—The F-86 pilots were riding over the indicated Mach num-



ber of 95 on most of the grueling lap. The plane is capable of a climb to 40,000 ft in 15 sec., and a dive from 50,000 ft to the deck in 35 sec., with speed brakes.

Last year AVIATION WEEK reported controversy that the XF-86 had reached supersonic speeds during dive tests, a fact later confirmed by USAF. Since then the craft has flown at supersonic speeds in level flight at altitude.

The Sabers are powered by General Electric J-45 jet engines, delivering 5000 lb. static thrust dry and 6000 lb. with water injection. Neither plane is the most, however, nor the most maneuverable.

Earlier, in demonstrations by the USAF and Navy, more than 175,000 Labor Day weekend spectators were treated to aerobically spectacular flights by the F-86s, along with USAF's Lockheed F-80s, Republic F-84s, North American F-51s, Mustang IIIs, and Consolidated Valiant B-24s. Navy's dive controlled jet was and team flights by Chance Vought F4Us, F4s, F4Hs, along with USAF's F-80s and F-84s, Douglas A-1Cs and the Martin Meteor and MiG.

Best Style Possible—This year's Air Race, evidently catering to the general public, did little to further industry knowledge of the competitive quality

of all such type operating aircraft. Last month, in Great Britain's first National Air Race, no second aircraft of the same type was entered in each event, a system any industry people would like to see adopted in U. S. race patterns.

In one of Britain's races, the Thruster P. 104B, Vampire 3 and D. H. 108 were pitted against each other. Several events were held in the various types and under of personal pilots, such as the Gloster, Gloster, P-104 and 108, Hawk Trainer, Miles Mercury and Meteor.

Here at Cleveland, private planes were demonstrated to the public in fly-by, and even then, only three Beech planes, a sweeping version of the Piper PA-11, and the de Havilland Beaver were shown. The PA-11, also shown on foot of the grandstand, competed over the crowd and beyond them with a gathering of people's Cessna's "Sim on Hue" plane.

Weather helped the pattern for Labor Day weekends in Cleveland with at least one day of rain. On the first day, heavy winds really upset the flying of most and events but while F-86 pilots blossomed the turbo engine, Bill Brewster, winner of the Goodyear Trophy Race, told Aviators Week he was not bothered at all by the winds.

A favorite with the crowd was the return visit of the de Havilland Vampire, members of the Royal Canadian Air Force's 40th Fighter Interceptor Squadron, commanded by Flight Lieut. W. R. Tew.

Speedily such included a mass demonstration by a Coast Guard plane, HRP-1, flown by Capt. Frank Erickson, who showed the formation over the water; flights by the plane pilot position. Winslow, aerobically by Betty Stetson and Steve Hanson, and a "last" between three vintage 1930 Curtiss pusher planes.

End of Races?

Odium crash again raises question as to value of airplane speed contests.

By Alexander McNeely

CLEVELAND—A tragic ending to the 1949 National Air Races surrounded a famous pilot, a mother and a child as the after of speed and again raised the question of the value of air race competitions in view of the last they cost.

Capt. William Odum, holder of numerous world records and long distance non-stop flight records, ended his life in the second lap of the Thompson Trophy race.

James May Mover—The 1950 National Air Races may be moved from Cleveland as a result of protests developed in the industrial area around Cleveland Airport following the Odum crash. It was reported at the public meeting following the crash.

Beechcraft, NAA General Manager, told the public that his organization has had reaction from the Federation Aeronautique Internationale to conduct the race in 1950, but he said the greater race management might move the show. At least two other cities, Dallas and Houston, already have put in bids for 1950.

Franklin told the United Press at Cleveland that "after what happened yesterday, it's possible that the authorities may try to obtain instructions against the race. We'll just have to wait and see what happens."

Cleveland, Wis.-Crosby, Cook, Clark, Wilcox, Ohio, airport operator, and 1949 Thompson winner, rode on vehemence to set a new closed-course record for competing against the flying of a record of 387,871 mph.

Odum's pilot, an F-86, had been modified by J. D. Reed of Houston, Tex., and used wingtip indicators, eliminating flexible rubber front end for a closer design. The plane

Goodyear Trophy Race

Place	Pilot	Plane Make	Elapsed Time	Speed MPH
1	Wm. Brewster	S. J. Waco	3:08.38	177.548
2	Rick Swanson	Keith Swanson	3:07.74	178.728
3	E. J. Whitson	S. J. Waco	3:08.07	178.244
4	Victor Alt	Glenn Patterson	3:09.41	175.974
5	Thomas Nelson	Lefevre & Jones	3:10.21	175.778

Eligible for 15 mph over 10 miles. All planes powered by Continental engines.

Allison Jet Trophy Race

Place	Pilot	Elapsed Time	Speed MPH
1	St. Miles C. Row	16.115	595.894
2	Ed. L. F. N. Page	16.115	595.897
3	St. L. F. N. Page	16.115	595.894
4	Capt. G. J. Bennett	20.449	516.621

Continental 1000 hp engine in Cleveland. Continental 1000 hp engine in Cleveland. Continental 1000 hp engine in Cleveland.

Timmerman Trophy Race

Place	Pilot	Plane Make	Elapsed Time	Speed MPH
1	B. W. McKillop, Jr.	Goodyear P-30	15.119	584.089
2	W. V. Marshall	M. A. P-30	16.115	579.738
3	H. H. McArthur	Spartan	17.115	559.545
4	J. B. Harkness	Lockheed P-30	18.115	535.478
5	J. B. Harkness	Lockheed P-30	19.115	511.819

Goodyear 1000 hp engine in Cleveland. Continental 1000 hp engine in Cleveland.

Sohio Trophy Race

Place	Pilot	Plane Make	Elapsed Time	Speed MPH
1	William Odum	M. A. P-30	16.115	595.894
2	Ron Perloff	Goodyear P-30	16.115	595.894
3	Charles Taylor	Boeing P-30	16.115	595.894
4	Steve Smith	M. A. P-30	16.115	595.894
5	Karl Givley	M. A. P-30	16.115	595.894

Goodyear 1000 hp engine in Cleveland. Continental 1000 hp engine in Cleveland.

Thompson Trophy Race

"R" Division

Place	Pilot	Plane Make	Elapsed Time	Speed MPH
1	Carl Clark	Goodyear P-30	16.115	595.894
2	Ron Perloff	Goodyear P-30	16.115	595.894
3	Steve Smith	Goodyear P-30	16.115	595.894
4	Steve C. Smith	M. A. P-30	16.115	595.894
5	Charles Taylor	Boeing P-30	16.115	595.894

Goodyear 1000 hp engine in Cleveland. Continental 1000 hp engine in Cleveland.

Bendix Trophy Race

Place	Pilot	Plane Make	Elapsed Time	Speed MPH
1	Joe Odum	M. A. P-30	16.115	595.894
2	Steve Smith	M. A. P-30	16.115	595.894
3	Thomas Nelson	Continental 1000 hp	16.115	595.894
4	Steve Smith	Continental 1000 hp	16.115	595.894

Continental 1000 hp engine in Cleveland. Continental 1000 hp engine in Cleveland.

Thompson Jet Trophy Navy Jet Carrier Race

Place	Pilot	Speed MPH
1	St. L. F. N. Page	518.872
2	St. L. F. N. Page	518.872
3	St. L. F. N. Page	518.872
4	St. L. F. N. Page	518.872
5	St. L. F. N. Page	518.872

Continental 1000 hp engine in Cleveland. Continental 1000 hp engine in Cleveland.

Bendix Jet Trophy Race

Place	Pilot	Speed MPH
1	St. L. F. N. Page	518.872
2	St. L. F. N. Page	518.872
3	St. L. F. N. Page	518.872
4	St. L. F. N. Page	518.872
5	St. L. F. N. Page	518.872

Continental 1000 hp engine in Cleveland. Continental 1000 hp engine in Cleveland.

had been called the fastest propeller-driven aircraft in the world. Olsen flew it in the second-hardest race among Thompson qualifiers, recorded only slightly by Cleland. Then he placed it to win the Tulsa propeller race at 385.591 mph before the final oval. Olsen also participated only in a fly-by exhibition at his "Winkler Beech" Bessie, which he flew last year from Hamilton to Toronto, N. Y., for a new light-place record of approximately 500 miles.

►Cochran Race Plane—Jacqueline Cochran, former Bessie race winner and wife of Hoyt H. Cochran, Canada's World War II champion, had purchased the "Bessie" 7-51 from Fred and Alvin Olsen to pilot it for her in the Thompson.

Olsen's plane crashed after it apparently went out of control in a turn on the seven-mile course. It struck a house, killed a woman in the house, and fatally injured a child who died shortly afterwards, and killed the pilot.

►Goodyear Steep-Goodyear's wartime F4C Corsair made a close sweep at the first three places in the Thompson race, in Ben Packett and B. W. McKillop, Jr., followed Cleland in second and third places. McKillop had previously won the Transamerica Trophy race, while Packett had finished a close second to Olsen in the Tulsa race. Another F4C owned by Cleland and piloted by Dick Becker, his son-in-law, was disabled in a post-race turn. The F4C, powered with a Pratt & Whitney 4500 engine rated at 1000 hp, a probably the most powerful single engine airplane of the piston-engine sports race flying.

Records were shattered in both the jet and piston engine divisions of the Bessie race. Max Vernon A. Ford, Middletown, Pa., flew a Republic F91 Thunderbolt fighter from Miami AFB to Cleveland at an average of 529.613 mph, compared to the previous jet Bessie record of 494.73 set in 1946 by Col. Lane Gray.

►Delburne War-Piston engine division, which carries prize of \$25,000 for the winner, local Joe Delburne, Beverly Hills, Calif., setting a new mark of 470.116 mph during his flight from Rosemead Dry Lake, Calif., to Cleveland. Delburne's F-91 plane was owned by film star James Stewart. Previous record was 450.42 mph, set by Paul Mantz in 1947.

A McDonnell Beechster, piloted by Lt. R. S. Lenz, took off from the corner Madison, near New York City, and flew at a speed of 348.975 mph to win the American Steel & Wire Co. race.

►Allison Race-Alison Division at Central Motor Corp., again captured a jet race from Indianapolis to Cleveland for F-80 fighter, which was won by Lt. W. C. Rew at a speed of 394.506 mph.

New light in the B-36 controversy was shed when Lt. Wiley Burton took a McDonnell Beechster from a standing start to 40,000 ft in 10 min. to win the Worthinghouse Navy jet climbing race.

The Beechster has been tested by the Navy as one of the few fighters capable of diving north the adobe-like microbarometer boulder at the high loach where many modern fighters get into maneuvering and stalling difficulties.

These Beechsters participated in the third race with one piston-engine Cessna F4P Beechster providing a contrast for the spectators.

►New Class—The racing pilot's racing head a proposal for a new contest. The race assignment is a type of class of men using power plants larger than those of the Goodyear and Allison (35 hp. Continental), but limited probably to 500 or 1000 or so in displacement (208-450 hp.). Franklin hinted that he already had a sponsor willing to back such an event in 1951, if the plan provided the pilots by that time.

A show of hands called for by Tony LeVine, president of the Professional Racing Pilot Assn., indicated at least two of the group are willing to back that type of entry.

Clement B.H. chairman of the Goodyear Race committee, and that in three years with 24 races (including preliminary heats) there had been no spectators in the single race competition.

►Other Side—Charles Tucker, Nashville test pilot and Thompson Race proponent, pointed out that many of the pilots had large personal investments in the wartime fighter planes now potentially used in the unlicensed private classification. He also suggested the danger of building "house-made" motors of lighter horsepower and emphasized the strong construction of wartime fighters and the availability of spare parts to keep them in good shape.

Another show of hands indicated that Tucker had every supporter in wishing to continue the unlimited class with military planes.



THE REGUINE, piloted by Ed Olsen, was forced to take the Thompson

Workmanship Pays Off in the Races

More mature approach helps solve problems of high speed flight; skilled service personnel a large factor.

By Robert McLauren

CLEVELAND—Close attention to professional advice and a more mature approach to the problem of speed in endurance was found in the high-horsepower group of racing pilots at the 1948 National Air Race. Much of this more conservative attitude resulted from a rigorous technical committee but was due in large measure to lessons learned from ill-fated experiments of preceding years.

Workmanship continued to pay off in such events as the famed Thompson, Sobow and Transamerica high-power races. Results of the races were determined by either of several personnel, which, in the case of the winners, consisted of pilots, professional and, rather than the haphazard enthusiastic but unqualified mechanics used by the losers through the years. Races now use light clamps and strongly placed supporting brackets.

►"Regime"—A thoroughly expensive \$761,000 (estimated) example was the "Regime", which, except for the basic plating over of Bell Oshin, the gold-plated Thompson Trophy Race would likely have been won. This model of North American A-16 (F-51) single-engine fighter, which featured a wing tip location of the tail, was a first place of secondary (nearly new) Kollsman V-1-630 Merlin engine, accessories and

equipment) than any airplane at the race and its official clock course speed of 405 mph, was a record for propeller-driven aircraft.

Olsen lost his life in a maneuver sketched to that which cost the life of Al Christie last year and proved the priority of danger in closed course racing. Olsen had cut a pole and was attempting to turn around when he apparently blacked out and the airplane rolled over on its back and into the ground in a blazing crash. After pulling out tightly on the pole, Olsen missed such on the start, hoping to clear it. Realizing he would have to risk, he pulled back on the stick, lightened the turn to the stalling point which produced a high-speed stall and forced the pilot to 1012-C acceleration from which he blacked out.

►Thompson—As in previous past high-power races, entry went to those whose engines continued to operate. Cook Cleland's 516.000 victory in the Thompson class was a tribute to his engine, in which he had installed elaborate injection equipment which he did not use. The one-two-three victory of the superb Goodyear F2G-1 Chance fighter again proved the basic advantage of power over workmanship. The Pratt & Whitney R-4660 Warp Motor concept in these three events, although equipped at 5575-71 hp., 2800-3200 rpm. (5700-4900 hp.), returned the

325-mph. ground and were in completely good condition upon completion. All three aircraft (Cleland, Packett and McKillop) were in satisfactory good condition after the race, without oil leak or bent tire, although some believe had been torn apart.

In the Goodyear event, in which all most were concerned in shock engines, but itself seemed important questions with many parts being worn by the pilot first in the air. This required low pitch propellers which sacrificed high speed performance. Velocis Shown Williams, who has won in every National Air Race ever held, produced the equivalent of a two-pitch propeller with the superbly blended wooden design he built himself. Under the load of takeoff, the blades bent to low pitch for the increased quick acceleration, but around the course the lightweight load reduced the pitch to high rpm. condition.

►Williams—Charles—First Williams and his successor had increased weight the field with changes of design and high engine speed in the two airplanes that have placed high in all the modern series. Only modification for the 1949 Williams Trophy event was more additional clean-up of engine cooling and propeller shifting, the latter considering of cross-gauge limitations. Master pilot, occupied the money-winning membership.

Second-place winner Keith Semmens proved one of the fundamental requirements rules in entering the race with the uncertain extent finish of the event. Although of conservative form, he "Miss Aguarda Scurry" placed second in the Goodyear final (he simply to this beautifully smooth final



BRABAZON TAKES OFF

Bessie's Brabazon II, after an investment of five years' time and about \$40 million, has made its first flight from the specially constructed runway at Palm, England. Test pilot Bill Page, who trained for the flight

by flying the Conquest E-36 at Ft. Worth, flew the right engine transport for 27 minutes before landing. Page reports that the plane's being airborne at 16 mph when a one of about 1500 ft. with engine at two

lightly loaded. With a spin rapid to that of the Conquest XD-90 (216 ft.) the Brabazon's launch race for test shorter. The Mark I is powered by 2100-hp. Continental engines. A long time may not be too long before

supplied, of course, with expert pilots.

American aircraftmen apparently included every extremity of element at the Goodpastor Topping. Many aircraft were obviously waiting their owners' money and their pilots' skills in the race by post instead of conventional, surprisingly crude lines and gradually "teaky" lines.

► **Sabson Switch-Hitters** "Fuh" Salmons, for example, attempted to improve on the design lines of the Cessna Wind series of aircraft designed by Glenn Falkenberg, Lockheed development, by using the wing and substituting a thin tube silver-colored fuselage, which placed him in fifth position behind a standard Cessna Wind piloted by Vincent Art. Sabson had done an excellent job in his airplane during and among conditions but lost all these advantages by a rectangular fuselage and smaller canopy.

Only unique new Goodpastor entrant this year, despite solid success at speed trials, was the two-boom "cruiser" ship, the two-boom master of the Lawrence Institute of Technology, Detroit, piloted by Carl Amble. Despite an outstanding pilot's job, the glowing white airplane was slowed by poor detail design. In addition to the obvious disadvantages of poorer construction, the student designers failed to appreciate the vital importance of detail design and finish in speed contests. Despite deepening red wheel instructions on both lower fus, wingtip lengths were added, as well as conventional fabric and formal metal skin that was poorly arranged.

Fibers were far more abundant in comparison than one feels this year then last. Standard Oil Co. of Ohio had made all Goodpastor trials with 180 gal. of oil in 10 or 11 cases (only two then used the latter due to its slower lack of maneuvering), and high-powered motors with 400 hp of a special engine. Speed comparisons were indicated only on occasion. Solar-powered 110/170 engine had, containing a 44 cubic inch lead with a heat content of 10,000 Btu. per gal. 241 Olin and Alvin Johnson and engine had in which they carried about a 400 gal. lead.

► **Fuel Injection**—All were equipped with fuel injection, although it was not used in all cases. Standard Pratt & Whitney 58-100 fuel-injected water injection fuel was supplied by Ron Parlett and Ben McKillop in their Wasp Major engine. Cook Cleland had equipped his trophy-winning Corsair for "St. Bernard" hydrocarbon injection but a later report indicated that this was not used in the race. Requiring more and water-flooded injection in 40-60 cubic inches with injection rates varying from 1.5 to 2.5 gal./min. An indication of the quantity (and weight) water required is pointed by the one-half gallon required for the race.

► **Military**—The North American F-86A Silver Streak-wing jet fighter led the long, restricted surface route in industrial interest. The Thompson Trophy Race "J" Division provided an accurate yardstick to the performance of the airplane at its level. From a single, closely-guarded, non-landing, aircraft fuel test, the Silver has blossomed into a quantity-production type with full squadron in attendance. Firmly designed, the latest of non-quad aircraft operational difficulties was the well-used appearance of this plane. While its clean-lined skin and careful surface finish and access door finishes are undoubtedly provided at the factory, under field service conditions much of this finish is lost.

Particular attention was paid in addition to the problem in the four Greenham F-86A fighter jet fighter from the "Blue Angels" aerobically from due to the light blue paint coating given these planes for identification purposes. The true, fading-wing fighter can feature lead, stainless-steel tanks, which were not expected upon exhibition.

► **Clark Race**—A number of current competitors was the Westinghouse clubman, featuring four McDowell F-2H Bumblebees, climbing from a standstill up to 40,000 ft. in 10-12 sec. Lack of economy to the true race from the fact that no official clocking was made. However, the aircraft is capable of doing the job in little more than one half this time so that no performance is a sufficient indicator was verified. The Bumblebee was ordinary AN-158 gasoline and features 20-hp engine, in contrast to the 15-cu inch engine used on Air Force fighters, including the F-86.

Indication of the importance of detail design was seen in the conditions of the two F-86A's upon completion of the jet division of the Thompson race. The second-place airplane indicated only a ground access door but the winner's fighter of Capt. Bruce Cunningham developed a sudden high speed failure that severely ripped the elements to shreds, leaving only a badly ruptured shock absorber. The center and overhead engine barrels, with accompanying elevator pistons, were carried away and the remaining portion during the trailing edge. The successful completion of the race and subsequent landing were made, apparently, by the use of stabilizer trim control.

P. O. Studies Air Star Routes

Post Office Department is making a survey to determine what air routes to investigate under existing legislation authorizing the service. Contacts for the routes will be for

by competitive bid. All types of mail will be transported. Star routes post will be transported under existing laws.

► **CAR NOTED**—When the Post Office decides to establish a route, the Civil Aeronautics Board will be notified by first-class airmail. The Board will have a 30-day period in which to consider the proposed new service and can veto it if it decides it is in conflict with the certificated airline routes.

Post Office officials estimate that about a dozen air star routes would be made over the coming year. These will be in areas where surface transportation is difficult. The Puget Sound region, the Great Lakes region, the Grand Canyon and other mountainous areas have been mentioned.

The department is now opening two domestic air star routes in the Great Lakes region. Until the new air star route legislation was enacted authorizing an unlimited number of domestic routes, the department was limited to five.

An agreement interchange agreement providing through-plane service between American Airlines pilots went at Dallas and Delta Air Lines pilots met at Dallas last been approved previously by the Civil Aeronautics Board.

The service will permit faster schedules over a section between several routes from Miami, Jacksonville, Atlanta, Birmingham and New Orleans to Los Angeles and San Francisco.

Under the interchange agreement on DCA-60 B-1 with standardized cockpit will be required initially. American will furnish four planes and Delta two.

► **Planes** on Lease—Six each of the planes passes the interchange point (Dallas), it will under the agreement be under lease to the connecting carrier. Captains assigned to the interchange flights will be authorized to deliver and accept delivery of the mail planes.

► **Pilot** Mail—Eastern and National had protested that even temporary approval of the American-Delta equipment interchange would require the use of a uniform transcontinental route. They argued that interchange service is not a substantial substitute for one-carrier service. CAB agreed NAL and EAL, that approval of the interchange under existing law will not reflect violation of the uniform transcontinental route case.

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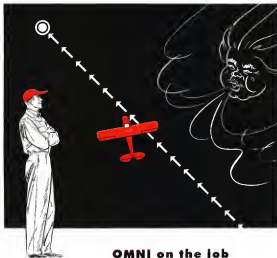
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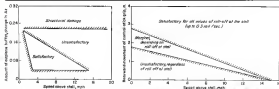
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CORRELATION OF pilot opinion of stall warning with alpha buffet (Fig. 1, left), measured amount of stall (Fig. 2, right).

Summing Up Findings on Stall Warnings

Pilot's reports on stalls correlated with readings from special instruments to set up design criteria.

One of the most important records sought in aviation history was the establishment of quantitative design criteria for determining the flying qualities of aircraft. This study induced pilot opinion to mathematical rules useful for design and placed the design of good handling qualities into a new airplane on a rational basis for the first time.

It is now possible to compare all of the flying qualities with specific quantitative requirements except one—stall warning.

► **Stall Warning**—Current flying qualities specifications state that approach to the complete stall shall be accompanied by a definite stall warning consisting of one or more of the following: (1) buffeting and shaking of the airplane and controls, (2) marked increase in control forces or marked increase of control force for further speed reduction, and (3) peculiar noise development of the stall through stall amplitude peaking and rolling motion.

The requirements also state that the stall warning shall occur at a speed not less than 1.05 or more than 1.35 times the stalling speed for each of the various flight configurations.

With the exception of the buffeting and shaking, none of these requirements provide the designer with any quantitative data to go by in the layout of the airplane.

Obviously, if he is to meet these requirements he must know: (1) amount of alpha buffet, (2) amount of elevator shudder, (3) amount of elevator

buffet, (4) maximum amplitudes of roll and pitch velocities, and (5) amount of change in elevator stick position and control force prior to the stall.

► **NACA Investigators**—To provide answers to these questions, the National Advisory Committee for Aeronautics obtained data on 16 airplanes, ranging from single-engine fighter to four-engine bomber types, flown by five research pilots having varied backgrounds.

Instruments were installed in the airplanes and pilots' notes made in which opinion of the stall warning was expressed.

By comparing pilot's opinion with data obtained from the instrumentation it was possible to get quantitative expression for his opinion.

One of the first problems encountered by the applicant was a complete lack of correlation of pilot opinion concerning several of the questions asked.

For example, control shaking shown by the elevator stick position acquisition did not give a good indication of the smallest hint of the control stick experienced by pilot, probably because of play and its variation in the control system.

Another area discussed was amount of buffet shown by the force variation at the control stick grip. This showed no consistent correlation with buffet or shaking of the controls, possibly because of variation in the control system and the fact that the force recorded depended upon instrument supplied by pilot.

► **Conclusion**—Only three found which produced consistent quantitative measurements and could be correlated with

pilot observation of the stall warning: nose normal acceleration, rolling velocity and elevator control position. Fig. 1 indicates the buffet location of the airplane approaching a stall in which pilot opinion indicated satisfactory and unsatisfactory conditions.

These data were obtained by an accelerometer and the technique used is the instrument in normal acceleration factor A_n . Incremental value of A_n measured at the first point of buffet was approximately 0.04, apparently the smallest change in acceleration that pilot was able to detect.

His ability to detect the lower limit of buffeting is reinforced by a number of factors, such as its frequency, presence of other fuselage vibrations and the intensity of the noise. In this regard, jet aircraft would possibly offer more ideal conditions for detecting stall warning produced by buffeting.

► **Dependency**—Factor—Judgment of whether the stall warning is satisfactory at the first indication of airplane buffet is dependent not only on the initial amplitude but also on the speed above the stall at which buffet first begins and how rapidly the buffet increases in amplitude with decreasing speed.

Again on the right of Fig. 1 indicates that buffeting did not arrive into buffet, at a stall warning, since at speeds as close as approximately 1.5 mph above the stall the buffeting was removed too far from the complete stall to serve as a satisfactory warning of the approaching stall.

Another unsatisfactory aspect of the early buffet is that it might build up to such great magnitude as stall is approached that the pilot from structural damage to the airplane (upper aspect of Fig. 1).

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The first controllable trim tab on a U.S. fighter plane was on the Consolidated PB-24 two-place recce design, which appeared in 1935. The first full-acting tab installation was on the little Loren Courier XP-11 Scout, which in 1935 used balance tabs on the ailerons and the elevators. The Republic P-35 fighter of 1936 trimmed two ailerons and the elevator and rudder; the Curtiss P-36, the following year, trimmed the rudder and elevators.

Bowing also occurred in the Navy fighter field with adjustable trim tabs on the XF7B-1 of 1933. The Customs PHC of that same year provided adjustable trim on the elevator. The Customs XF12C-1 two seat fighter featured the first Navy controllable trim tabs on its elevator. The Customs 133-fighter of 1935 introduced controllable trim tabs on its rudder.

Since these pioneering applications, the use of control surface tabs has grown in complexity and importance until by the beginning of World War II it was a universal feature of high-powered aircraft of all types throughout the world.

► **Definitions**—Because of the wide variety of tab forms and arrangements, it is convenient to classify them according to basic function without reference to individual methods of operation or linkage systems.

- **Lungs** (left)—There is a main bronchus posterior

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of a control surface used simply to trim the airplane to straight, level flight in such a manner that it may be flown "hands off."

• **Balance tab**—This is a movable portion of a control surface that is linked with the wing or stabilizer in such a manner that it moves in an opposite direction throughout the range of motion of the surface to which it is attached, and serves to reduce the pilot effort required to recenter the control.

- **Servo tab**—This is a movable portion of a control surface which is linked to the cockpit in such a manner that the tab directly controls the airplane through movement of the surface to which it is attached.

There is a wide variety of subdivisions of these main classifications. For example, the term tab may be adjusted

► **Search for Data**—The principal contribution of the Wright Brothers to aviation, it is often claimed, was a

...of controlling an epidemic is

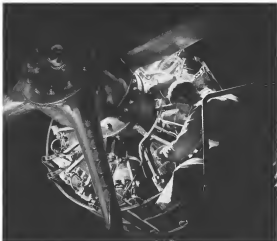
Further designs, which later tests proved ineffective. Further designs, both powered aircraft and gliders, had either no control surfaces or systems obviously inadequate in concept.

A major portion of subsequent education history was occupied with research and development of stability and control characteristics. The two qualities are closely interrelated, but of the two, stability is much more amenable to mathematical treatment and, therefore, to research design analysis.

Control has been largely a matter of guesswork and it was not until 1943 that qualitative appraisal of aircraft handling characteristics was reduced to the necessary derivatives and coefficients such as to the aerodynamicist.¹

Following this important restriction of test pilot opinions to actual design data, it became possible for the designer to give a new airplane stability and control characteristics that would insure safe flying qualities without pilot fatigue or discomfort. However, the letter considerations gave rise to a wide variety of opinion. The second important step in the process was to find out how much strength in average pilot had to exist in flying an airplane.

► **Pike Effect**—Several approaches to this problem have provided important data, but some conflict still stresses behavior, military and civil services, and



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between the U.S. and British aircraft. These data, however, do establish the existence of:

- Constant control effort of which a pilot is capable.
- Minimum effort reasonable over a short period of time.
- Constant effort pilot desires to exert over a period of time.

Generally, these three figures decrease by a factor of two in each case if the first is 100 lb, the second is 30 lb and the third is 25 lb.

There are rather specific control laws beyond which the pilot feels an uncomfortable, actual fatigue and, in the extreme case, inadequate strength to deal with the situation. These are the basic design conditions towards which the engineer works in the layout of the airplane and its control system.

• Controls—There is only one speed at which an airplane will fly without a force being exerted on the control design creating speed. Any deviation from this speed will require a pressure on the controls in order to hold the airplane in steady, level flight. A change in the c.g. of the airplane, the power of the engine, etc., requires a change in control forces.

In order to increase the range of, e.g., and power conditions over which the airplane would fly "hands off," designers early provided an adjustable stabilizer, the leading edge of which could be raised or lowered through a crank in the cockpit. Slight changes in this stabilizer position balanced out the subsequent force and reduced the control forces to zero.

This device, while eminently satisfactory, was structurally complicated and expensive. It was to eliminate the adjustable stabilizer that the true tab has come into use.

• What Tab Does—Assume that the airplane c.g. is slightly aft of its design position, making it a slight tail heaviness to the engine and the necessary for the pilot to hold the stick forward slightly in order to maintain level flight.

The true tab is a small movable arm of the elevator located at maximum chordwise distance in a square direction. This small arm is deflected upward, creating a downward on the elevator trailing edge.

The product of tab angle, tab area and distance of the trailing of the arm from the elevator hinge line is equal to the product of elevator area times outward of elevator arm from the elevator hinge line. When these two products are equal, the trail stick force is zero, and the elevator will remain in its slightly down position without further attention from the pilot.

This is the simple principle of the true tab. This relationship applies to the elevator and aileron as well as the



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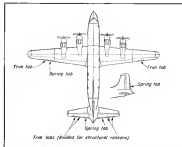
Makers of the Mighty Thunderjet • Thunderjet • XR-12 • XF-91

hood of 18-30 percent and an aspect ratio of 5:10. To provide fine adjust means, the gap between cockpit trim tabs and tab displacement in degrees should be fairly large. Because trim tabs must be reversible, great care should be taken to prevent lockless, which can be prevented by the use of a fine thread on the tab operating drum.

► **Balance Tab Dents**—Balancing tabs have the inherent characteristic of reducing the effectiveness of a control surface to which they are attached (due to their movement in a direction opposite to that of the surface). For this reason, a control surface must have a predeflected, up or down deflection in order to obtain the same lift effectiveness.

As in the case of the trim tab, the minimum-chord balance tab that can be used with any fixed control surface is limited by the condition that the tab should not be deflected beyond its 23 deg effective range.

One of the principal advantages of the balance tab is the fact that fast modifications in the characteristics of the system, as indicated desirable by flight tests, can be made by changing the rate of tab deflection through decelerating or lightening the link arm. The general requirements of size and shape given above for the trim tab are applicable to the balance tab.



TABS now come in all sizes and shapes, and for all purposes.

► **Tab Gap**—Gaps at tab hinges indicate the tab effectiveness and the reduction resulting from tab gap is so large as to make an extremely narrow gap or even tab notch advisable. Tab effectiveness is sensitive to geometry and surface con-

dition, and is reduced by increasing the leading edge angle, roughness of the surface to which it is attached, or any turbulence which tends to increase the boundary layer thickness near the leading edge. (Continued on p. 35)



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- 18 Objective is with typical range of frequency and conditions
- 19 Data is available for computer from system of 12 or 24 sets O.C. or 118 sets

1. Texas Identification by means of light microscopy.
2. Frost spacing by observation of cloudy state phenomena.
3. Remote control unit.
4. Automatic record monitoring system.
5. Automatic record length control.
6. Visual sensor feedback indicator.

For additional information, visit

2004 Feb; 12th Annual
Pharmacology 7, Pg.

DOHERTY,
roadway, New York

[illegible]

A system which substantially prevents "Dutch roll"—sideways oscillation of the tail caused by gusts and eddies in the air—on the XB-47 Stratojet is reported to have been developed by Boeing Aerospace Co., Seattle, Wash.

The system is designed to move the rudder either left or right to counterbalance the effect of a side gust on the tail the instant it occurs.

It consists primarily of a rate-of-change gyro from an E-6 auto pilot, a torque-supercharger amplifier and a turbo-water-pulse motor which is connected to a rubber push pull rod.

When the Stopper's tail starts to yow, the gyro puts out current signals which are heard by the amplifier to actuate the small turbo motor. The motor is operated to shorten or lengthen the pushrod rod, moving the slider a maximum of five degrees to the right or left.

put it up to

Just as during the war, EEMCO has continued on into peacetime in close contact with the aircraft industry—performing a specialized design, development, engineering and manufacturing service. Leading aircraft builders have asked us to coordinate or assist in some of the more important elements of the final design, and to manage more new radar developments. EEMCO's built aircraft and avionics have solved the very toughest problems of function, power, size, weight, shape, performance, installation and appearance. Let EEMCO tackle your problem.

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...of difficult and unusual design...
are our specialty



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[illegible]

12 to 24 wds., 70 inch dia. - support on 2000 lb. 2" dia. as a starter. Good to use - kept in a plastic bag - 12 wds. in 12 wds. - 12 wds. as 24 wds. 12 wds. 12 wds.



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Open through vent
gives dry 1.54 ft.
discharge with vent
and tapered pipe
Weight 21.5 lb.



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 1/2 HP
 115V
 1725 RPM
 1/2" shaft
 1/2" flange

**EXPLOSION PROOF
 ALUMINUM BOOSTER MOTOR**
 1/2 HP
 115V
 1725 RPM
 1/2" shaft
 1/2" flange



EQUIPPED WITH AIR DUCTS Inside and outside ducts for warm and/or cooling air. Comfortable air riding at 40-45 mph with a ton of extra high level of power. Pressure, 2-1.0-2.0, when depressed, provides the springing action. And back, as good, 7.0-8.0 lbs. per sq. in. (psi).



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2000 cc engine 11,000
p. 1000 cc engine
121 km.



AUTOM BOOSTER MOTOR
Open through venting for outside air supply. Standard and optional. Weight, 12 lb. J H F, construction only.

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Marquette

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Continental Air Lines celebrated its 15th Anniversary in July. This special event is being held at its highest record of flying 55,000 passengers more than 345,117,000 passenger miles without a single mishap. We are happy to have played a part in this great accomplishment.

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TIE-ROD PUMPS AND INJECTORS
PRECISION PARTS AND ASSEMBLIES

PRODUCTION

Cost Estimates for B-36 Program

	Airframe	Gov. Furnished Property	Total	Unit Cost
Original 42 B-36 Award Under 42-01-01 Award	\$114,861,800	\$10,611,600	\$125,473,400	\$4,110,300
Interim modification Under Award 42-01-01 (Supplementary Award)	41,001,679	130,314,900	171,316,579	3,350,276
Refurbish 200 B-36s	\$120,721,400	\$220,352,000	\$341,073,400	\$1,705,367
19 B-36s Original Award Under 42-01-01 Award (Award 42-01-01)	210,610,200	275,831,000	486,441,200	4,100,849
Total	\$286,193,079	\$636,798,500	\$922,991,579	
Cost of design			\$1,000,000	
Cost of experimental models			\$1,000,000	
Total estimated cost	\$286,193,079	\$636,798,500	\$922,991,579	

Summary of Termination Costs (Fiscal Year 1947-1949)

Termination costs	
Senior Officers Board (Dec. '48) Jan. '49	\$16,467,597
Senior Officers Board (Feb. Mar. '49)	\$22,862,385
Losses from Fiscal Year 1948 and Prior Years	
B-36	\$5,532,222
B-36-90C	6,536,306
F-57	1,161,926
B-12A	145,828
	16,657,878
Total	\$56,017,700

What the B-36 Is Costing USAF

Comptroller gives breakdown for original and repeat order, and shows financial effect of cancellations.

By Robert Hutz

Revised figures on U.S. Air Force contract cancellations show the shift of approximately \$673 million in government contracts during the past nine months over the government's \$54,113,730.

These figures, as compiled by Lt. Col. Edward R. Hutz, USAF comptroller, for the following payments tentatively scheduled to the companies whose contracts were cancelled or shifted:

• North American Aviation, Inc., \$15,467,941 out of contracts covering \$192,133,808. This covers cancellations of contracts for 50 B-49C jet bombers and 116 F-49As jet fighters.

USAF entered a contract for North American to build two YF-93A prototype jets at a cost of \$10,158,445. North American is now scheduled to get \$5,895,145 for the settlement of the B-36 contract as contrast to \$72 million originally estimated by USAF. The F-93 contract settlement will cost \$46,155 in contrast to an original estimate of \$6,631,537. This leaves \$5,904,635 now available for new projects from the B-36 settlement reserve and another \$6,167,000 from the F-93 reserve.

• Boeing Airplane Co., \$11,002,478 out of contracts totaling \$113,937,000. This is for the settlement contract for 45 B-45 VJPF-powered bombers. Another \$6,799,107 will be required to

settle contracts for government furnished parts to be used on the B-36. Cost of terminating all B-36 contracts totals \$22,862,385, leaving a balance of \$17,155 out of the \$23 million reserve originally set aside for cancellations. Also chargeable to B-36 cancellations costs are \$25,348,000 from fiscal 1948 funds allocated for a YB-50C and B-36 prototype development. Boeing also received a \$14,177,000 contract for an additional five B-47 bombers which will require about \$7 million in electronic equipment.

• Northrup Aircraft, Inc., \$15,927,000 out of original contracts totaling \$112,500,000 for 30 B-49 jet Fighters. Weight and 30 C-125 transport biplanes USAF plans to speed \$1,315,840 for a prototype B-49 jet wing. Cancellations at the B-49 contracts will cost \$10 million, with the C-125 contract termination cost now set at \$628,137. This leaves \$1,136,000 of the original reserve set aside for terminating Northrup contracts, available for new procurement.

• Convair, \$240,000 out of an original \$2,500,000 contract for the YF-52A, a bomb/interceptor version of the Convair-Lear.

Also released from the cancellations is \$6,002,300 worth of government-furnished equipment for the cancelled aircraft that can be used in other aircraft now in production.

Convair's YF-52A is scheduled to receive \$1,511,000 for settlement of its cancelled contract for 50 F-57A night fighters, and Bell Aircraft Corp. is awarded for \$141,025 to cover a contract in its B-12A helicopter contract. Raytheon estimated total cost of the B-36 production program now stands at \$488,906,979 for 107 production models and one XB-36. About \$487 million of this authorized expenditure has been spent on B-36 production to date.

• Boost in Total—Original order of 95 production models B-36 bombers was based on a unit cost of \$4,691,992 per plane, of which nearly half was government-furnished equipment. Modifications of those planes with late model Pratt & Whitney Wasp Major engines, addition of four General Electric J47 turbojets and the new K-12 radar bomb sight system will add another \$1,576,194 per plane and boost total unit cost to \$5,248,636.

The second increment of 75 B-36 bombers will cost only \$4,732,979 apiece, because cancellation was by the B-36 in 1951 cut the Air Force \$105,621 of which \$38,168 was paid to Boeing for

General. The continental bomber design competition won by the B-36 in 1941 cut the Air Force \$105,621 of which \$38,168 was paid to Boeing for

NEW AVIATION PRODUCTS



It is adaptable for power tool use. Dissector and turning radius have been shortened and weight reduced from 4½ to 2½ lb.

Hard bearing pulley has tapered, expanding end to give smoother operation.

New parts are 17½ in. short rod, 4050RS, designed to permit use of this turner puller in close places, and narrow pulley iron, 9027, for narrow-duty pullers. Latest parts into tight places and can be used for reaming wheels, gears, etc., which have cut-out sections for reaming narrow pass.

Communication Aid

CAA-approved F31 aviation amplifiers, developed by Aerostat Radio Corp., Roseton, N. J., are designed to permit operation of communication equipment by pilot and copilot without interference from each other.

It enables pilot and copilot to select any combination of 10 channels: radio, interphone, etc., with complete independence of the other's choice. It also provides loud speaker operation to both.

Company states no interference exists between the two channels regardless of signals selected by either pilot. Unit weighs 8½ lb. and is approved under certificate 136-1.



Pullers and Wrenches

Redesign of the "Photo" puller parts and addition of two new units is announced by Finch Tool Co., 2109 Santa Fe Ave., Los Angeles 54, Calif. Their series for wheel and heavy and wide-duty pullers, have detachable non-rotating tips. Dwell coupler holds tip on screw and keeps it properly aligned.

Heavy-duty, 1½-in.-diameter steel puller



No-Flutter Antenna

Duplex antenna developed by National Aeronautics Corp., Whip Field, Ambler, Pa., for use with Naco comm-ence unit, is acoustically stabilized to prevent flutter.

Company states that when series of compressive (flat, tapered), stainless steel rods were selected because of their resistance to bending during strong conditions.

The unit and pedestal are constructed of cast aluminum.

Cuts Heavy Cable

Portable, hand-operated cable cutter, offered by Beverly Silver Mfg. Co., 3080 W. 37th St., Chicago, 10, is designed to inspect, align, or when prying action to stress shaps, close cuts are steel cable at one stroke. Unit also is stated to be particularly adapted to cutting hollow core synthetic, steel wire, bonded rubber hose, heavy electrical cable, and conduit.

Cable is inserted between blades and spring tensioned held down arm with V-block then is pushed down to freely sever cable fast cutting. Company claims unit easily cuts lowest cable because of double link, which constantly dovetails faces. Blades are adjustable to compensate for wear and misalignment.



New Sparkplug

Single-electrode sparkplug, D36, offered by Aviation Division Corp., 11440 S. Central Ave., Los Angeles, Calif., is stated to give better spark in congested area and easier to adjust than multiple-ground electrode plugs.

CAA-approved plug has heavy-duty metal electrode and is claimed to have high resistance to heat because of aluminum oxide insulator which resists chip piling, cracking, pitting and detonation. Its design is intended to permit speedy cleaning and replacement of parts.

Company states that at completion of CAA 200-hr. endurance test, comparative power curves showed performance was equal to other well known plugs.



Fluid-Drive Motor

For opening, conveyor, extractor, and bridge and hoist drive, a single turn, uniquely designed, electric fluid drive motor announced by Richard Kinslow Co., Alhambra, Calif., is stated to offer savings in original cost and maintenance over conventional electric fluid-drive.

Unit is especially suited for loads requiring smooth acceleration and position from jarring and shocks. Its closed hydro-mechanical unit is easily accelerated, because motor is precharged up to speed before any load is applied.

Other advantages claimed: Motor can be selected closer to by requirement, reduced starting current, shocks not absorbed in oil cushion. Sealed in standard foot mounted on recoil body frame, unit can be positioned horizontally or vertically and are available in 1 to 10 hp. sizes.



Aeroproducts Actuators in Action...

when the McDonnell BANSHEE takes to the air

The big positioning jobs on the Banshee are performed by Aeroproducts Actuators because they're built for the big jobs—because they are compact, reliable, accurate and low in weight-strength ratio. They reflect the experience in precise blade actuation perfected in the constant-speed Aeroprop.

Because the efforts of Aeroproducts field service are applied to your actuator as well

as propeller needs, constant liaison is maintained. Let Aeroproducts, backed by General

Motors Research, work with you from development and design to production.



1. One looking gear drive, 1/2" shaft, 100-200 lb. 2. One looking gear drive, 1/2" shaft, 100-200 lb. 3. 1/2" shaft, 100-200 lb. 4. One looking gear drive, 1/2" shaft, 100-200 lb.

Aeroproducts



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Designing for tomorrow



AEROPRODUCTS DIVISION • GENERAL MOTORS CORPORATION • DAYTON, OHIO





THE SUPERSONIC XF-88 now undergoing intensive testing at the Air Force Research and Development Office, Dayton, Ohio, is opening deep inside enemy territory as a fighter-bomber.

as a bomber-escort. It is a single-place, twin-turbojet plane with a pressurized cabin, and weighs some 15,000 pounds, has a wing span of approximately 40 feet. Data restricted.

What material helps make the XF-88 possible?

Answer: Aluminum! The sleek, bellied, belted-looking McDonnell XF-88, with its very thin wings and tail assembly, wouldn't be practical—couldn't perform as remarkably as it does—without the use of light, strong aluminum.

Builders of all modern aircraft are drawing upon aluminum's versatility more and more—to perform design miracles which step up the speed, strength and power of today's planes.

That's why it was important when, little more than three years ago, Permanente Metals began integrated

production of Kaiser Aluminum—springing to manufacture a dependable new source.

Today Permanente Metals contributes more than one quarter of a billion pounds of aluminum to the nation's yearly supply. Almost as much as the entire country produced just ten years ago!

In achieving such production, Permanente Metals is setting high standards in the industry for high quality aluminum, on-time deliveries, unexcelled service.

Result: Today every major U.S. aircraft builder customarily uses Kaiser Aluminum!

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SALES & SERVICE



JNNI, flown by Al Fox, was not fast enough, placed sixth.



HERMAN "Fish" Seamon kept the LeVar Midget, placed fifth.

Midget Race is Close Contest

Brennard's victory credited to his "jockey" weight and good piloting; LeVar withdrawal gesture praised.

By Alexander McNulty

CLEVELAND—Higher speeds and close competitions again made the 1949 Goodyear midget race the high point of the National Air Races in many of the spectators' eyes.

Bill Brennard, weight 166 lb., piloted "Buster," the red Wittman

speed, to win at a new record speed of 117.34 mph. It was the Outlook, Wis., pilot's second triumph in the three years of the Goodyear Trophy races. He won in 1947 and placed fourth in the 1948 race. His airplane, and its closely similar sister ship "Bambi," appeared light changed from last year's race except for the addition of new streamlined wheelpods. Brennard used one of the new McClellan streamlines that made wing propellers, while Steve Wittman's Bambi, which placed third at 116.34 mph, turned one of Wittman's newly designed wooden "mower blade" propellers.

Dark Horse—Second place was taken by a "dark horse" contestant, Keith Seamon, of Los Angeles, who out-

such veteran midgetman pilots as Steve Wittman, and Herman "Fish" Seamon. In the seventh leg Seamon's light blue and white plane moved up to threaten Brennard's lead, but the leader pulled out again, and left Seamon behind him during the remainder of the race.

Analysis of the race indicates that jockeyman Brennard's light weight was probably a strong contributing factor in his success, along with his excellent piloting. His plane was last to leave ground and spring into an immediate lead after the race-horse start. He flew low and fast at pilot height. He told Aviators' World that he had copied Wittman's plane, which is usually slightly faster, to pass him, but after he stayed out in front for several laps he decided it was up to him to win.

Wittman and Brennard do not believe that they are getting the maximum performance possible out of their little planes even yet, and are preparing additional modifications for next year. A new set of wings for "Buster" is nearly completed and will be installed

probably before the planes go to Miami for the Continental Motor midget race in January. Incidentally, both Brennard and Wittman have won previously at Miami.

•**Coastal Winds**—Two of the three Coastal Wind type aircraft midget planes built by LeVar and Associates, fought a up-and-back race for fourth place, with Vincent Art in Pullman's green Bellanca barely beating out Herman "Fish" Seamon, last year's winner. Seamon had sweated his machine, carrying back the lavings on the cooling vents to live into the wing. Seamon flew a "daisy-chopping" race while Art flew almost directly over him, throughout the race, and dove slightly to pass him at the finish.

The plane owned by Tony LeVar, third of the Coastal Winds, ran into bad luck in a semi-final heat, when it popped the canopy and killed Robinson, the pilot was forced to withdraw from the race. LeVar decided not to run it in the conclusion Goodyear race for plane eliminated in the earlier heat because its qualification speed had been so much higher than that of the other planes in the elimination.

LeVar had planned to use a special modified ignition system in "Little Tony," his plane, and had arranged it so that it came within the legal requirements of the Goodyear specifications, and was approved by the contest committee. Some reports were that it exceeded his plane's speed more than 30 mph. As a result of protests by the other pilots that the system gave LeVar too great an advantage, LeVar agreed to withdraw the system.

•**Amateurism**—Note-Protests included numerous letters written to Aviators' World, and later threats of pilots to withdraw from the Goodyear race if LeVar did not change his machine. LeVar's sportsmanlike attitude in withdrawing the system, after it had been ruled in within the regulations, was highly praised by the contest committee.

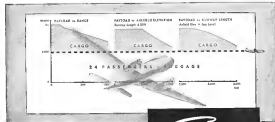
Seamon's dark-horse plane, second place money in the Goodyear, was a plane which he and Mike Armada, another West Coast pilot and plane builder, had been building. Aviators' World while flight-testing a midget designed by the late Art Chester "Bess" Seamon, and Armada's engine designed to complete the plane in a particularly suitable and in tribute to Art's name.

One of the most improved planes in the 1949 Goodyear was the dark all-metal Pein special which went to the finish this year after winning its qualification heat. From then a midget race in the final but his plane with its distinctive high stabilizer was still not fast enough to catch the Wittman, Seamon and Coastal Wind planes.

THE UNSEEN PASSENGER OFFERS HIS SEAT

"The unseen passenger" is a common occurrence on most transport planes. With due consideration to the take-off weight it is not always possible to carry the full complement of passengers, although empty seats are available in the plane.

"The unseen passenger" does not, however, appear on the Scandia. Under practically all conditions this plane can take the full number of passengers with baggage—in addition to a paying freight.



CONDITIONS

Cruise Altitude 10,000 feet
Cruise Power 550 BHP
Headwind 10 MPH
ATA Fuel Reserve—Standard Arrangement

Scandia

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AIR TRANSPORT



HERMES V, fourth and largest of Britain's stable of turbine transports. As is 97 ft. length and 84,000 lb. takeoff weight.



FOUR HERMES V's which total 10.50 hp. for takeoff.

H. G. Hisselby at the controls, the ship flew for 30 minutes at about 2000 ft. The test was described as "completely successful" with the new engine making a credit of 343 mph at less than full throttle.

Push to Jerk—The Hermes V is a development of the Hermes IV, with the new Bristol Hercules engine engines replaced by four Bristol Taurus turboprops. This success the takeoff rating from 8100 to 9500 hp.

In other reports, the Hermes V is seriously advanced with the IV, which made its first flight about a year ago. Both have a completed payload of 17,000 lb.

While two prototype Hermes V's have been ordered by the British Ministry of Supply as research aircraft to test further the possibilities of turboprop-powered transports, it is no secret that Handley Page would like to cultivate a few orders from airline operators. Until these orders are forthcoming, no production is contemplated.

Hermes IV—Meanwhile, production of the 25 Hermes IVs on order for BOAC is nearly completed, with delivery of the first of the order expected this month and the remainder by the end of 1949. Builder's trials have been completed, and Air Research Board certification was recently obtained.

The Hermes IV, which is fully pressurized, is intended for operation along BOAC's Empire routes at altitudes of 30,000 ft., where it is designed to cruise at about 300 mph with a range of 1700 miles. Maximum gross weight is given at 75,000 lb., but may be higher by the time the plane goes in service.

By contrast, the minimum gross weight of the Hermes V is 84,000 lb., and its cruising speed at 30,000 ft. is 325 mph. Rate of climb at takeoff

Britain Pushes Turboprop Liners

While pure-jet transports have stolen the spotlight, first airline order is for turbine-propeller planes.

(McGraw-Hill World News)

Great Britain is making sure its new turboprop transports will not play second fiddle to faster, more spectacular pure-jet airplanes such as the de Havilland Comet.

The British late last month flew their fourth and largest turboprop plane—the Handley Page Hermes V, which reportedly can carry the equivalent of 67 passengers and two tons of cargo.

Coincidentally, British Overseas Airways Corp. and British European Airways announced they are making new agreements with Vickers-Armstrongs Ltd., on a joint order for the 40-passenger Viscount, the world's first turboprop airliner.

As the British prepare to push turboprop development they are more busy

at the U. S. commercial aircraft sales listening industry.

"Acheson's Hot-Side Miles Thomas, BOAC chairman, and the American system of mass production has at Acheson's hand. "It is less light of foot, less willing to adopt new techniques to its processes, it powerful, production machinery. That should enable us in Britain to hold our ground."

So New Kites, managing director of Vickers-Armstrongs' aviation division, declared that after 1950 piston-engined planes could be regarded as obsolete. He said that he, for one, expected the Americans to "sit up and notice that before long."

First flight of Britain's newest turboprop transport, the Hermes V, was made at the Handley Page airfield at Watlington, Oxfordshire. With Chief Test Pilot

Mamba

memoranda

No 10

EASE OF INSTALLATION



Every attention has been given to providing the most quickly detachable power unit. All services have been carefully grouped on the rear bulkhead close to the four attachment points.

**ARMSTRONG SIDDELEY
MOTORS LIMITED**
Turkley, Coventry, England

Sketch of the Mamba Siddeley Group



a 2000 ft. per minute. Dimensions of both the Hermes IV and V-1000 111 ft. length 87 ft., and wing area 1400 sq. ft.

► **Vietnam Order**—Number of Vietnam Voughts ordered by British government airlines has not been disclosed. But it is a Vietnam order that BSA will take 28 and BSAIC "about a dozen." BSAIC's proposed order is on behalf of its associate company, British West Indian Airways.

BSA has already turned down the Vietnam in favor of the Amped Ambassador passenger aircraft. Twenty Ambassadors are on order and are expected to go in service by 1951 on BSA's Casablanca service starting

from London. These planes, for the most part, will be fitted out to carry 40 to 60 passengers.

Vietnam Airways, which designed the Vought for similar service with four Rolls Royce Dart turbine engines, caused through its project, and the prototype flew a test flight. Later last week, the builders revised the design, using a longer fuselage to carry a greater number of passengers. It is this modified version, termed the Vought 700, which will be built under the new order. Expected delivery date is 1951.

There is no Vought 700 in existence at the moment. But the prototype Vought, since its first flight in August last, shows more than 250 hr.

Will NWA's Boeings Pay Their Way?

CAB vice chairman Ryan voices negative opinion on use of 377s by carrier on transcontinental-Orient service.

A \$15 million question mark is flying over the Boeing Strato-cruiser placed as transcontinental service by Northwest Airlines this month.

Majority of the Civil Aeronautics Board still believes the ten double-decked two-engineers produced by NWA will promote economical and efficient service. But the Board's vice chairman, Oswald Ryan, has added his voice to those contending that Northwest's management may have made a serious error in acquiring high-capacity planes costing \$1.5 million each.

► **Loan Mite Controversy**—NWA was granted for the Boeing early in 1949. For months ago, the carrier asked Bank Construction Finance Corp. help in swinging a \$25 million bank loan to be used primarily for the Strato-cruiser purchase.

It is the financing arrangement (in which BFG's commitment was by a maximum of \$12 million) that has opened the way for attacks on NWA's Strato-cruiser program. Last May, a government financial expert appearing before the Senate Interstate and Foreign Commerce Committee said that CAB should veto NWA's proposed BFG loan because the money would be used to buy great plants for operations over trans-Atlantic routes.

Despite this protest, CAB in a split decision endorsed the BFG loan to Northwest. And now, belatedly, the Board has issued an opinion stating that the reason for its action

► **Majority Opposes**—The CAB majority, including Chairman Joseph J. O'Connor, Jr., and members John Lee and Ronald Adams, and representative of U.S. corporations carried with forth of modern aircraft (such as the Strato-cruiser) is clearly desirable and reason-

able with the Board's function of encouraging and developing air transportation.

"The Strato-cruiser appears to represent substantial progress in aircraft design both in terms of performance and economy," the CAB majority contended. "Although no operational experience has been as yet available, it would appear that the Strato-cruiser may well have among the lowest unit operating costs of any aircraft in commercial service."

► **Responsibility Deferred**—Because of

congressional concern over how far CAB would go in issuing approval of the loan, the Board made clear that its approval of the deal does not guarantee to Northwest any more and compensation than the carrier would be entitled to otherwise. It and approval of the BFG arrangement does not constitute a moral commitment by the Board to adequately automatically later action by Northwest with respect to the Strato-cruiser.

"All new aircraft are experimental in nature, both with regard to their technical and economic aspects. If it develops that the equipment is not suited for the purpose for which it is designed, or that there is too much of it, the decision of economical and efficient management require that the carrier correct the situation either by disposal of this or other equipment or by less intensive utilization."

► **Competitive Problem**—CAB said that with the Strato-cruiser Northwest should be able to correct certain handicaps under which it has been laboring for 18 months because its principal competitors already modern four-engine equipment (such as Constellation and DC-6) on paring domestic routes. The opinion noted that competitors are in the process of putting new four-engine planes on both paring Northwest's transcontinental operations.

NWA plans to put five of its Strato-cruiser in domestic service, three on the Great Lakes and two on the West Coast Hawaii link of the airline.

► **Ryan Replies**—In his dissent, CAB Vice Chairman Ryan said Northwest



FLIGHT ANNOUNCEMENT Jukebox

Airline dispatchers at Seattle-Tacoma Airport use a newly developed push-button public address system for announcing incoming and outgoing flights. Each flight announcement, coded by letter and number, is heard in a small speaker control box at each of the right gates. When the action switch meets a flight, he pushes two buttons on the box, releasing the proper recorded

announcement over the public loudspeaker. Heart of the system is a 150-watt vacuum tube Jukebox. The announcement is cut on each side of a 10-inch disk. At present 60 records are used to cover the arrivals of UAL, WAL and NWA. It is stated that the new device will save \$1400 monthly over comparable systems employing the service of live operators.

WHY DO SO MANY PEOPLE SAY...

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More and more, airline officials and owners of executive aircraft are saying, "Send it to Airwork". Here's why:

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is in a most difficult position by reason of its Stratacom commitment. He warned that CAB approval of the RFC commitment would require the Board to undertake the Stratacom through and pay needed as one of the planes, either for cost or efficient management for a reasonable time period may result in increased financial needs by North-west.

"Normally an airline should take the risk that selection of new equipment which has the effect of increasing and pay requirements may be found unreasonable, with the resulting higher expense disallowed by CAB. In the present case this risk is eliminated, because by approving the RFC deal the Board has in effect, found that Northwest's belief decision to acquire Stratacom was sound."

Ryan agreed that the Stratacom gives even promise of making a valuable contribution to international—and possibly domestic—transportation. But he pointed out that the ship's home port is available on a wide scale, regardless of there are passengers to fill the seats.

►Traffic Density Choke-Off its international route to the Orient, Ryan declared. NWA increased only 15.5 passengers per mile in 1945—hardly a respectable load for a DCA, much less a Stratacom.

In the first quarter of 1949, Northwest's average load on its new Seattle-Boston route was 11 passengers, and Pan American's load on the route was about the same. Yet, Ryan noted, both Northwest and PAA plan to use Stratacom between Seattle and Boston. Ryan thought that combined traffic could be handled easily by a DCA.

Domestically, Stratacoms are capable successors for Northwest's operations. Ryan declared. He observed that NWA's present traffic per domestic route mile is less than that of United Air Lines. "Under these conditions, United's service, at least to support Northwest's operations, is the largest equipment available."

Travel Tax Evasion

Bureau of Internal Revenue has taken steps to halt widespread evasion of the 15 percent U.S. transportation tax.

The agency ruled that month that the tax on passenger tickets bought in the U.S. applies to the landing of lands outside the country for purchase of transportation and/or subject to the U.S. law. During recent months, purchases by Americans of airline, rail and bus tickets in Canada and Mexico has become a throng business.

►Law Enforced—Specifically, the Bu-

reau of Internal Revenue's pronouncement. "The 15 percent tax is due when it is received and is subject to and, money orders or other funds to ticket offices, travel agents, etc., in other countries for tickets covering transportation in the U.S. The tax is also due if American citizens, with travel or transportation, enter in this country for the furnishing of such tickets from a foreign address."

Issues of the U.S. transportation tax became a popular practice after Canada opened a similar law earlier this year (Aviation Week, May 16). Bureau of Internal Revenue officials previously had indicated there wasn't much they could do to stop the evasion, and there is considerable doubt that the new ruling can be enforced effectively.

Feeders Ready

Turner and Bonanza plan scheduled DC-3 operations this fall.

Two more short-haul carriers, one in the midwest and the other in the far west, plan to inaugurate regularly scheduled operations with a conventional transport-type equipment this fall.

Turner Airlines, Inc., Indianapolis, hopes to begin service over its feeder routes within the next month, using 21 passenger DC-3s. The company's links are between Cincinnati and Grand Rapids, Mpls., and between Louisville, Ky., and Chicago. Initial operations (see month's delay) will be on the southern portion of the system—first Indianapolis to Chicago and Grand Rapids.

►Nacuda Carrier-Bonanza Air Lines, Las Vegas, Nev., plans to start scheduled operations between Reno, Nev., and Phoenix, Ariz., with 21 passenger DC-3s by November. The carrier has been operating regular scheduled service between Las Vegas and Reno since the summer of 1946 but was not granted an interstate certificate until last June.

CAB recently approved transfer of Bonanza Turner Aeronautical Corp.'s feeder certificate to Turner Airlines. The transfer was originally issued to Bonanza Turner Aeronautical Corp. in February, 1948, but previous plans to inaugurate service under it fell through because of financing difficulties.

President of Turner Airlines is Cal Ransom Turner, and vice president is Paul W. Wenzel, president of Northwest Air Transport Service, a Murchison-owned and now scheduled carrier, is executive vice president and acting operating head of Turner Airlines.

The kadekian's certificate is now scheduled to expire on Feb. 6, 1951. ►Black Thursday. The agreement between the feeder certificate holders that Bonanza Turner Aeronautical Corp. will receive 20,000 shares, or 25 percent of the outstanding stock of Turner Airlines, for the franchise. From DC-3s, spare engines, parts and other equipment now owned by Northwest Air Transport Service will be made available to Turner Airlines by Western Aircraft in exchange for 60,000 shares (the remaining 75 percent of the outstanding stock) of the feeder company.

In approving the certificate transfer, CAB specified that Northwest Air Transport Service must surrender its letter of registration as a large irregular carrier within six months and must not engage in any air transportation thereafter. In the alternative, the Western family cannot dissent about themselves of control of Northwest Air Transport Service to eliminate any common control of Turner Airlines and the unregulated operation.

►Contract Operations—Northwest has been operating as a contract carrier since February, 1948. It has had contracts with the Department of Agriculture to fly farm workers recruited in the Caribbean area to the U.S. and hence again.

U.S. Immigration and Naturalization Service has used Northwest to transport deportees (mostly Latin American) to their own countries. The carrier operates two subsidiaries in Miami and New York. The carrier is engaged in aircraft maintenance and overhaul. Recently Northwest has carried fuel, vegetables, shrimp and other cargo on a non-scheduled basis between points within the U.S. and between Mexico and the U.S.

CAB and it indicated that to require Northwest to dissolve its unregulated operations would probably result in a heavy loss to the company that the Board believes it is not in the public interest to approve control of a feeder by a large carrier or carrier.

►TWA-Bonanza Deal—After activation of Bonanza Air Lines franchise on CAB approval of an agreement, the carrier has made to take over TWA's Phoenix-Las Vegas link. The arrangement would continue for the life of Bonanza's three-year temporary certificate or for as long as Bonanza holds its CAB franchise.

In discussing Bonanza for a certificate line spring, CAB and the franchise would not be issued until the carrier made a satisfactory agreement with TWA, the sole operator of Phoenix-Las Vegas operation and until the Bonanza company could show it had adequate financial resources. Proof of adequate financial resources will be made available shortly, Bonanza, northeast Edward Cameron told the Board.

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BEA's First Profit

(McGraw-Hill World News)

LONDON—July was the first month British European Airways made a profit since the airline was organized (Aug. 2, 1946). Annual figures for years ending March 31 have not yet shown a profit over an entire year, and this is expected to be the case also with the year ended March 31, 1949, for which report has not yet been released. However, BEA is now hopeful of the outlook for a profit over the whole of the current fiscal year.

British Overseas Airways Corporation has just yet to share a profit in any annual total, covering the airline as a whole. Its Atlantic line, however, has been more than paying its own way and its full share of the overhead, for some time. British South American Airways showed a small profit in its first year of operation, which was reduced in its second year's report.

Costs Reduced—While the July profit cutting, profit is, perhaps, partly due to the increased volume of high traffic, but other reasons have made significant contributions to the reduction of costs.

Rigid control over expenditures and the introduction of cost-saving methods, under the advice of public

auditors, management efficiency considerations. Considerable reduction in office staffs has resulted.

A bonus-incentive scheme for BEA's maintenance workers, introduced to speed the letter part of 1948, is expected to be unique among airline operations.

Dutch to Suspend

AMSTERDAM—KLM, a commanding suspension of its domestic Dutch airline, currently maintaining substantial losses because of heavy competition from ground transportation over the short distances.

Dutch government intervention stopped a previous KLM attempt at suspension, but the carrier will definitely stop domestic operations at least for the winter. KLM recently cut in half the fares on its domestic lines.

Equipment Change

Western Central Airlines plans to acquire larger planes—probably DC-1s—for its feeder operations only next year, according to Ed N. Carr, vice president. The company now uses six Lockheed Electras.

Car said the decision to let WCA's fleet capacity match local area passenger volume in passenger traffic

SHORTLINES

► **Aer Transportes, S. A.**—The Mexican domestic airline has asked its government's permission to operate from Mexico City to Veracruz, Toluca, New Orleans, Washington and New York. Company would use DC-4s for Washington and coach-type service. If the Mexican government approves, ATSA will ask CAB for a foreign air carrier permit.

► **Ancient Air Line Dispatchers** have suggested a contract with AA calling for an average \$75 monthly income guarantee to Apr. 16. New rules require from \$775 a month for the first six months to \$775 a month in the seventh year.

► **BOAC**—The aircraft corporation bill, given for design of British Overseas Airways Corp. and British South American Airways, has been signed by the King. Effective date is dependent on completion of negotiations for transfer to BOAC of rights and properties held by BSA as foreign carrier.

► **Capital**—Sept. 3 issue of *Saturday Evening Post* carries an article on J. H. Connors, Connors' president, and the title "He Wants to Make Money on an Airline".

Company is reported a net profit of \$254,161 in July and operating profit of \$290,530. Net profit for first seven months of 1949 represented a \$653,000 improvement over the same period last year.

► **Chicago & Southern**—Has declared a dividend of 75 cents a share. Company's net income for first six months of 1949 was \$236,421, or 73 cents a share, compared to \$207,682, or 57 cents a share, for the same period last year.

► **Midwest Airlines**—Is now the old name of Louis V. Moore Co. (See Moore CAB recently awarded the carrier's certificate under the new name.)

Carrier still hopes to start service in Iowa, Nebraska, Minnesota and South Dakota shortly with Douglas C-47s. Company has asked CAB insurance that its franchise will be extended three full years after Sept. 1, 1949.

► **National**—Reports that about 20 percent of its revenues this summer have been from monthtrip excursion tickets. Preliminary estimates place NAL's net profit for first half 1949 at \$566,660, compared with a net loss of \$1,849,463 in the same period last year when a strike was in progress.

► **The Atlantic**—Plans to cut fares to Alaska on its 25 percent between Oct. 1 and Mar. 15.

► **Pan-Am**—Has been advised by the Texas airport general that it may have



On this page of Aerotec controls, the controls are shown in detail. (Continued on page 10)

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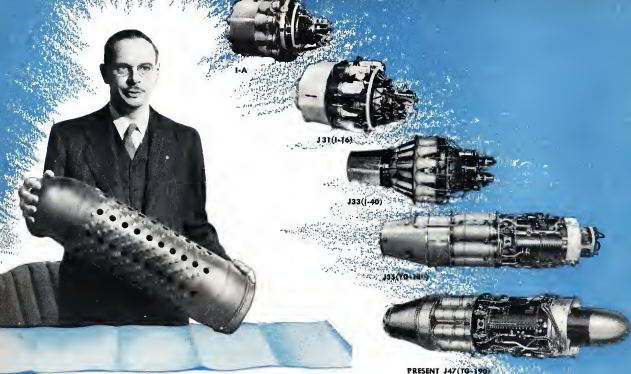
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